

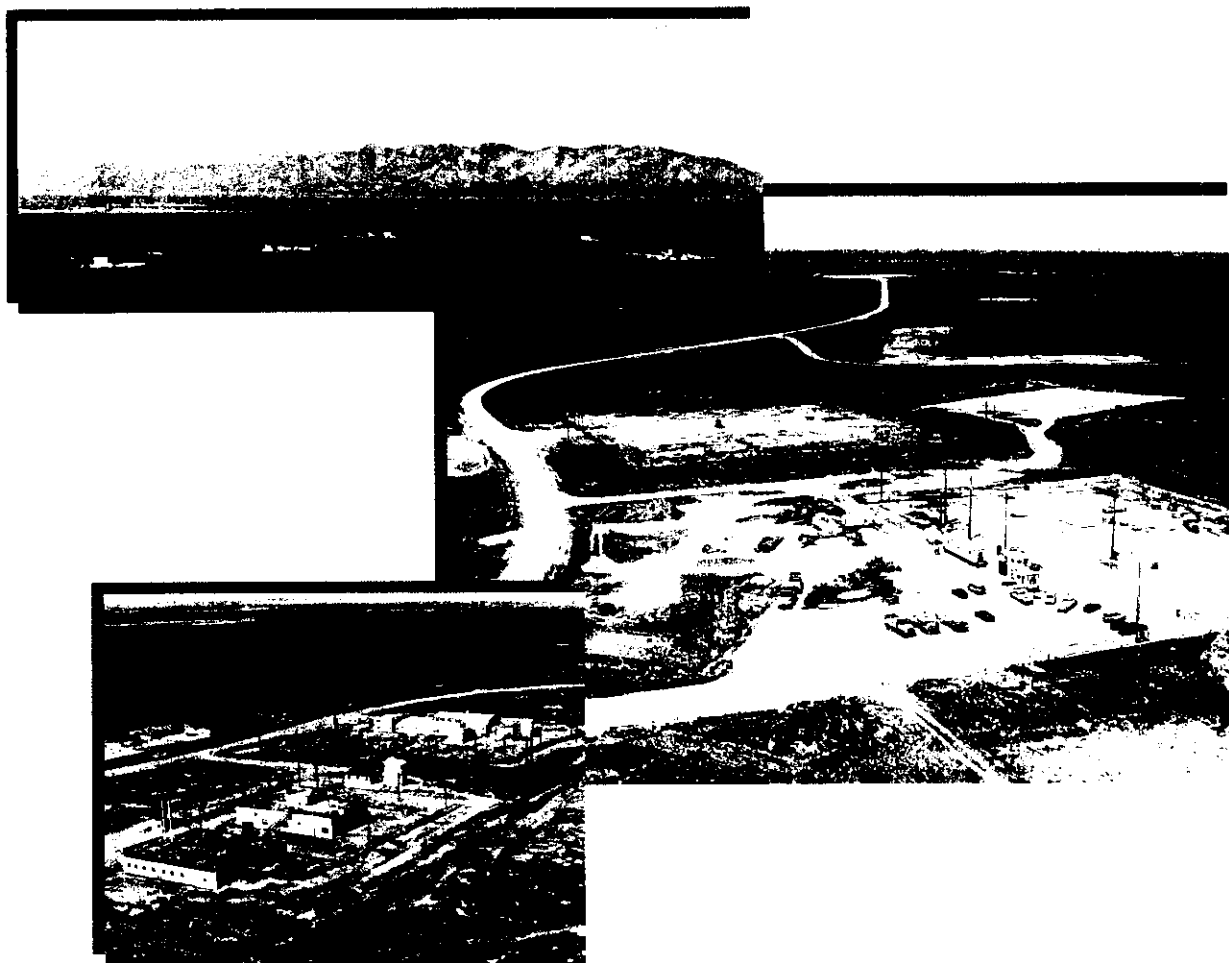


IDAHO DEPARTMENT  
OF HEALTH AND  
WELFARE

DIVISION OF  
ENVIRONMENTAL  
QUALITY

## Record of Decision

# Power Burst Facility and Auxiliary Reactor Area



Operable Unit 5-12  
Idaho National Engineering and Environmental Laboratory  
Idaho Falls, Idaho

# **Record of Decision for the Power Burst Facility and Auxiliary Reactor Area**

**Published January 2000**

**Operable Unit 5-12  
Idaho National Engineering and Environmental Laboratory  
Idaho Falls, Idaho**

## **PART 1: DECLARATION**

### **Site Name and Location**

Power Burst Facility and Auxiliary Reactor Area

Waste Area Group 5 Comprehensive Remedial Investigation/Feasibility Study, Operable Unit 5-12

Incorporating 55 individual sites in Operable Units 5-1 through 5-13

Idaho National Engineering and Environmental Laboratory Idaho Falls, Idaho

CERCLIS ID 4890008952.

### **Statement of Basis and Purpose**

This decision document presents the selected remedy for Waste Area Group (WAG) 5 at the Idaho National Engineering and Environmental Laboratory (INEEL). The selected remedy comprises remedial action at seven individual sites and outlines the limited action comprising institutional controls that will be implemented for nine additional sites. The components of the selected remedy were chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan. The selected remedy is intended to be the final action for contamination at WAG 5.

The U.S. Department of Energy Idaho, Operations Office (DOE-ID), is the lead agency for this decision. The U.S. Environmental Protection Agency (EPA) approves the decision and the Idaho Department of Health and Welfare (IDHW) concurs. The EPA and IDHW have participated in the evaluation and selection of remedies for WAG 5 sites of concern, the no action and institutional control decisions, and the identification of sites that will be administered under other INEEL regulatory programs. The bases for decisions are established in this Record of Decision (ROD) and documented in the Administrative Record for WAG 5.

### **Assessment of Site**

Actual or threatened releases of hazardous substances from WAG 5, if not addressed by implementation of response actions selected in this ROD, may pose an imminent and substantial endangerment to public health, welfare, or the environment.

### **Description of the Selected Remedy**

Waste Area Group 5 at the INEEL, comprising the Power Burst Facility (PBF) and the Auxiliary Reactor Area (ARA), is one of 10 WAGs identified in the Federal Facility Agreement and Consent Order (FFA/CO). Operable Unit (OU) 5-12 encompasses the WAG 5 Comprehensive Remedial Investigation/Feasibility Study (RI/FS). The FFA/CO, which provides the framework and schedule for the implementation of CERCLA at the INEEL, was negotiated and signed by DOE-ID, EPA Region 10, and the IDHW Division of Environmental Quality. Waste Area Group 10 is the INEEL-wide investigation. Results from the WAG 5 Comprehensive RI/FS and the other eight waste area groups will be evaluated cumulatively in the WAG 10 study to reach final CERCLA-based decisions for the entire INEEL.

The PBF contains five separate operational areas and the ARA, which is undergoing decontamination and dismantlement, historically comprised four separate facilities. The INEEL Comprehensive Facility and Land Use Plan projects that the ARA will be encompassed by a future buffer to public roads (i.e., State Highway 20) and will not be reused for future INEEL operations. Conversely, the forecast for the PBF area includes modification and reuse for industrial operations over the next 100 years. In combination, the ARA and PBF contain 55 individual sites. The Comprehensive RI/FS tasks were to estimate the cumulative risks associated with all 55 sites and identify and evaluate appropriate remedial actions for those sites posing unacceptable risk. The RI/FS results and the preferred remedial alternatives were summarized in the WAG 5 Proposed Plan, which was issued for public review in May 1999.

The Comprehensive ROD is the culmination of the WAG 5 Comprehensive RI/FS. This ROD documents the remedies selected for six sites at ARA and one site at PBF that pose unacceptable risk to human health or the environment. The remedial actions were selected in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act, and to the extent practicable, with the National Oil and Hazardous Substances Pollution Contingency Plan. This ROD is based on the information contained in the INEEL Administrative Record and is designed to satisfy the requirements of the FFA/CO.

The selected remedy for WAG 5 comprises three remedial actions to mitigate the risk associated with seven specific sites, and limited action to implement institutional controls. Management of stored and investigation-derived waste and groundwater monitoring also are components of the selected remedy. The first remedial action addresses a collection of five individual sites where contaminated soil is the only source medium. The second remedial action will mitigate residual contamination in a sanitary waste system. The only principal threat identified in WAG 5, addressed by the third remedial action, is posed by the contents of an underground storage tank. The limited action addresses institutional controls that will be implemented at nine additional sites and outlines the development of an institutional control plan for WAG 5.

### **Selected Remedy for Contaminated Soil Sites**

Unacceptable risk to human health or the environment from contaminated soil sites designated as ARA-01, ARA-12, ARA-23, ARA-25, and PBF-16 have been identified. The human health risk associated with ARA-01, ARA-12, ARA-23, and ARA-25 is primarily external exposure to ionizing radiation. Adverse effects to ecological receptors are associated with ARA-01, ARA-12, ARA-25, and PBF-16. Removing all soil that is contaminated with concentrations in excess of the remediation goals will mitigate these threats. The remediation of the soil sites will include the following activities:

- Soil contaminated with concentrations in excess of the remediation goals will be removed using conventional earth-moving equipment (e.g., scrapers and backhoes).
- Areas that have been excavated to depths greater than 0.3 m (1 ft) will be backfilled with uncontaminated soil or sloped to promote drainage. All excavations will be contoured to match the surrounding terrain and vegetated.
- Contaminated soil will be characterized and sent to the INEEL CERCLA Disposal Facility (ICDF) or another location within the INEEL for permanent disposal.
- Existing institutional controls will be maintained until the selected remedy has been implemented at four of the five contaminated soil sites. Interim controls are not required for PBF-16, a site identified for remediation based on ecological risk from exposure to mercury.

Institutional controls will not be required after remediation if all contaminated media are removed to basalt or if contaminant concentrations are comparable to local background values. Otherwise, post-remediation institutional controls consisting of signs, access controls, and land-use restrictions will be established and maintained until discontinued based on the results of a 5-year review.

### **Selected Remedy for the ARA-02 Sanitary Waste System**

The ARA-02 Sanitary Waste System will be remediated to mitigate excess human health risk. External exposure to radioactive contaminants is the primary exposure of concern. The entire system (i.e., three septic tanks, a seepage pit, and piping) will be removed. However, the unacceptable risk is associated only with contaminants in residual dry sludge at the bottom of the seepage pit. A time-critical removal action was implemented in 1996 to remove the contents of the septic tanks. The remediation of the Sanitary Waste System will include the following activities:

- The sludge in the seepage pit will be removed and sent to the INEEL Waste Experimental Reduction Facility (WERF) for batch incineration and final disposition.
- The components of the Sanitary Waste System (i.e., the seepage pit gravel and cinder blocks, three septic tanks, and pipes) will be excavated. The debris will be sent to a permitted disposal facility off the INEEL such as Envirocare in Clive, Utah, or an approved facility on the INEEL such as the ICDF for final disposal. The debris will be decontaminated or encapsulated only if necessary to meet waste acceptance criteria for disposal.
- The excavated areas will be backfilled, contoured to match the surrounding terrain, and vegetated.
- Based on soil sampling results, soil contaminated with concentrations in excess of remediation goals is not expected. However, if such soil is identified by observation or using field survey equipment during remediation of the Sanitary Waste System, the soil will be removed and managed in conjunction with the remediation of the contaminated soil sites described above.
- Existing institutional controls will be maintained until the selected remedy has been implemented. Institutional controls will not be required after remediation if all contaminated media are removed to basalt or if contaminant concentrations are comparable to local background values. Otherwise, post-remediation institutional controls consisting of signs, access controls, and land-use restrictions will be established and maintained until discontinued based on the results of a 5-year review.

### **Selected Remedy for the ARA-16 Radionuclide Tank**

The ARA-16 Radionuclide Tank will be remediated to mitigate excess human health risk from contaminated soil and to prevent a release from the tank that could expose human and ecological receptors to toxic and radioactive contaminants. The contents of the tank pose the only principal threat identified in WAG 5.

The tank site is located within a larger contaminated soil area (i.e., Site ARA-23). Though tank operations are not the cause of the soil contamination, the primary quantified risk identified for this site is external exposure to contaminated soil surrounding the tank. Risk estimates for the tank contents were not quantified in the WAG 5 baseline risk assessment because a release has not occurred. However, the

remediation of the site will address both the contaminated soil and the principal threat posed by a potential release of the tank contents to the environment. The remediation of ARA-16 will include the following activities:

- The tank contents will be removed, placed in drums, and transported to the Transuranic Storage Area at the Radioactive Waste Management Complex (RWMC) for monitored storage until an approved treatment facility is available. The RWMC operates under a Resource Compensation and Recovery Act permit, and the waste will be subsequently treated and disposed of to satisfy the appropriate waste acceptance criteria and to comply with applicable regulations.
- An approved treatment facility, such as the INEEL Advanced Mixed Waste Treatment Facility (AMWTF) or the ATG, Inc. Richland (ATG) facility in Richland, Washington, will batch incinerate the waste. The AMWTF is being constructed to treat transuranic waste and will manage the final disposition of the post-treatment residual material. Depending on the post-treatment characterization data, the waste may be certified and packaged to satisfy the waste acceptance criteria for the Waste Isolation Pilot Plant near Carlsbad, New Mexico. The ATG facility has a thermal treatment system compliant with the Resource Conservation and Recovery Act and the Toxic Substance Control Act. If the tank waste is sent to ATG, the treatment process will be controlled so that the final waste form meets the acceptance criteria for the selected disposal facility. Candidate disposal facilities for the waste residuals include the ICDF, the Waste Isolation Pilot Plant, and Envirocare.
- The tank and pipes will be removed, decontaminated to the extent practicable, and either recycled or sent to the RWMC for disposal depending on the degree of decontamination that is achieved.
- The concrete vault and gravel around the tank will be removed and sent to the ICDF, the RWMC, or the Central Facilities Area for final disposal, depending on the results of waste characterization analyses.
- Contaminated soil will be excavated and dispositioned in conjunction with the remediation of the contaminated soil sites as described above.
- The excavated areas will be backfilled, contoured to match the surrounding terrain, and vegetated.
- Existing institutional controls will be maintained until the selected remedy has been implemented. Institutional controls will not be required after remediation if all contaminated media are removed to basalt or if contaminant concentrations are comparable to local background values. Otherwise, post-remediation institutional controls consisting of signs, access controls, and land-use restrictions will be established and maintained until discontinued based on the results of a 5-year review.

### **Limited Action**

No additional remediation will be conducted under CERCLA for the remaining 48 of the 55 sites in WAG 5. However, institutional controls will be maintained at nine of these sites, enumerated in the table below, because residual contamination precludes unrestricted land use. In April 1999, the EPA Region 10 developed a policy for institutional controls. During the remedial design/remedial action (RD/RA) phase, an institutional control plan for WAG 5 will be developed that follows the guidelines in the policy.

### Institutional control sites at Waste Area Group 5.

Site Code	Description
ARA-03	ARA-I Lead Sheeting Pad Near ARA-627
ARA-06	ARA-II Stationary Low-Power Reactor No. 1 Burial Ground
ARA-24	ARA-III Radiologically Contaminated Soil
PBF-10	PBF Reactor Area Evaporation Pond (PBF-733)
PBF-12	PBF SPERT-I Leach Pond
PBF-13	PBF Reactor Area Rubble Pit
PBF-21	PBF SPERT-III Large Leach Pond
PBF-22	PBF SPERT-IV Leach Pond (PBF-758)
PBF-26	PBF SPERT-IV Lake

The U.S. Department of Energy (DOE) ensures that institutional controls are in effect over the next 100 years unless a 5-year review concludes that unrestricted land use is allowable. After 100 years, DOE may no longer manage INEEL activities and controls will take the form of land-use restrictions. Though land use after 100 years is highly uncertain, it is likely that industrial applications will continue at the INEEL and WAG 5.

### Additional Components of the Selected Remedy

In addition to the remediation that will be applied to specific sites, several activities will be implemented at WAG 5 to complete the selected remedy. These activities, including disposition of stored and investigation-derived waste and groundwater monitoring, are discussed below.

**Disposition of Stored Waste and Investigation-Derived Waste.** The treatment and disposal of 55 drums of waste currently stored at ARA-II will be achieved as a component of the selected remedy for WAG 5. The drums contain septic tank waste from the ARA-02 Sanitary Waste System, decontamination waste, and investigation-derived waste from sampling the ARA-16 Radionuclide Tank contents.

Of the 55 drums, 47 contain waste that can be accepted at the WERF and will be sent to that facility for incineration. The eight remaining drums contain polychlorinated biphenyl (PCB) concentrations at levels regulated by the Toxic Substance Control Act and cannot be treated at WERF. The eight drums will remain in storage at ARA-II until the waste can be sent to the AMWTF or another compliant facility for treatment. If the waste is not be sent to a treatment facility within 2 years of the issuance of this ROD, the waste will be relocated to the Mixed Waste Storage Facility or another compliant centralized INEEL location for continued storage until a treatment facility is available.

Contaminated media such as soil, debris, liquids, sample residue, sampling equipment, and personnel protective equipment not specifically identified by the INEEL FFA/CO or in this comprehensive investigation may be generated as a result of RD/RA activities at WAG 5. Procedures to address the investigation-derived waste will be documented in the remedial action work plan. In addition, legacy waste that has been generated as a result of previous sampling activities at WAG 5 will be appropriately characterized, assessed, and dispositioned in accordance with regulatory requirements to achieve remediation goals consistent with remedies selected for the sites in this ROD.

**Groundwater Monitoring.** Surveillance monitoring of the groundwater beneath the ARA and PBF facilities will resume as a component of the selected remedy for WAG 5 specified in this ROD. Groundwater monitoring is not required to satisfy WAG 5 remedial action objectives or cleanup goals, but will reduce the uncertainty in previous sampling results and provide trend data to assess the

possibility that an unidentified source of lead contamination is affecting the aquifer. The complete list of analytes will be determined in consultation with other INEEL groundwater monitoring efforts and may be modified as needed to support collective data needs. Samples will be collected annually until the first 5-year review for this ROD. Based on the results of the 5-year review, DOE-ID, EPA, and IDHW will determine whether continued groundwater monitoring will be required at WAG 5.

## **Statutory Determinations**

### **Statutory Requirements**

The selected remedies are protective of human health and the environment, comply with federal and state requirements that are applicable or relevant and appropriate to the remedial actions, are cost-effective, and utilize permanent solutions and alternative treatments (or resource recovery) technologies to the maximum extent practicable.

### **Statutory Preference for Treatment**

The selected remedy for the contaminated soil sites does not satisfy the CERCLA statutory preference for treatment to reduce toxicity, mobility, and volume. Most of the contaminants of concern are radionuclides that cannot be destroyed through treatment. However, the soil will be excavated, consolidated, disposed of appropriately, and managed at the ICDF or another location within the INEEL. Management of the contaminated soil will include measures to limit contaminant mobility (e.g., containment). A cost-effective method to separate the contaminants from the soil is not available. Therefore, the volume of contaminated soil will not be reduced.

The selected remedy for the ARA-02 Sanitary Waste System satisfies the statutory preference for treatment as a principal element of the remedy (i.e., the remedy reduces toxicity, mobility, or volume through treatment). The source of risk associated with this site is the dry residual sludge in the bottom of a seepage pit. This sludge will be removed and treated by incineration. Incineration will reduce toxicity by destroying the low-level concentrations of polychlorinated biphenyls in the sludge and will reduce the volume of the sludge from approximately 1.5 m<sup>3</sup> (2 yd<sup>3</sup>) to a small quantity of low-level radioactive ash.

The selected remedy for the ARA-16 Radionuclide Tank satisfies the statutory preference for treatment as a principal element of the remedy (i.e., the remedy reduces the toxicity, mobility, or volume through treatment). The contents of the tank will be removed and stored until an appropriate treatment and disposal facility such as the AMWTF, scheduled to begin operation in 2003, or the ATG facility, scheduled to open in 2000, is available. Incineration is the planned treatment technology for the AMWTF, and vitrification is the treatment technology for ATG. Incineration or vitrification will destroy the hazardous constituents in the tank waste, thus reducing toxicity, and will reduce the waste volume to a small amount of radioactive ash or glass.

Because no active remediation will be applied to the nine additional institutional control sites, the selected remedy does not satisfy the statutory preference for treatment as a principal element of the remedy.

### **Five-Year Review Requirements**

Because the components of the selected remedy for WAG 5 may result in hazardous substances, pollutants, or contaminants remaining in WAG 5 above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within 5 years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment.



Most remediation goals are based on soil concentrations equivalent to a risk of 1E-04 (1 in 10,000) to a hypothetical resident 100 years in the future. Therefore, residual hazardous or radioactive substances may remain after remediation that preclude immediate unrestricted land use, and institutional controls will be applicable. Five-year reviews will be conducted for remediated sites with institutional controls until it is determined during a 5-year review that controls and reviews are no longer necessary.

As discussed above, limited action will be implemented to manage the residual contamination at nine sites in WAG 5. These sites also will be subject to 5-year reviews. Controls such as access restrictions will be maintained until it is determined during a 5-year review that controls are no longer necessary. The status of these sites will be examined during the 5-year reviews for WAG 5 to ensure that site conditions have not changed significantly and that the status of each site remains consistent with this ROD. The reviews will include an assessment of maintenance requirements such as subsidence and drainage repairs.

## **Record of Decision Data Certification Checklist**

The information listed below is included in the Decision Summary (Part 2) of this ROD:

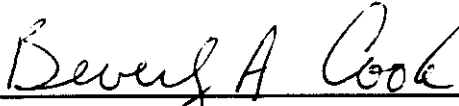
- Contaminants of concern (COCs) and their respective concentrations
- Baseline risks represented by the COCs
- Cleanup levels established for the COCs and the basis for the levels
- How source materials constituting principal threats are addressed
- Current and reasonably anticipated future land-use assumptions and current and potential future beneficial uses of groundwater used in the baseline risk assessment and ROD
- Potential land and groundwater use that will be available at the site as a result of the selected remedy
- Estimated capital, annual operation and maintenance, and total net present value costs; the discount rate; and the number of years over which the remedy cost estimates are projected
- Key factors that led to selecting the remedies (i.e., how the selected remedy provides the best balance of tradeoffs relative to the balancing and modifying criteria).

Additional information can be found in the Administrative Record for WAG 5.

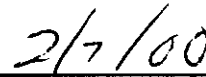


## Signature Sheet

Signature sheet for the Record of Decision for Operable Unit 5-12, located in Waste Area Group 5 comprising the Power Burst Facility and the Auxiliary Reactor Area of the Idaho National Engineering and Environmental Laboratory, between the U.S. Department of Energy, Idaho Operations Office, and the U.S. Environmental Protection Agency Region 10, with concurrence by the Idaho Department of Health and Welfare, Division of Environmental Quality.



Beverly A. Cook, Manager  
U.S. Department of Energy,  
Idaho Operations Office




Date



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Chuck Clarke, Regional Administrator  
Region 10  
U.S. Environmental Protection Agency

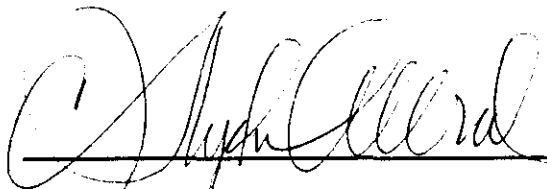


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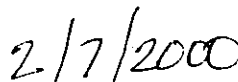


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A handwritten signature in cursive script, appearing to read "Stephen Allred", written over a horizontal line.

C. Stephen Allred, Administrator  
Division of Environmental Quality  
Idaho Department of Health and Welfare

A handwritten date "2/7/2000" written over a horizontal line.

Date





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## ACRONYMS

AMWTF	Advanced Mixed Waste Treatment Facility
ARA	Auxiliary Reactor Area
ARAR	applicable or relevant and appropriate requirements
ATG	ATG, Inc. Richland (facility)
BLM	U.S. Bureau of Land Management
BRA	baseline risk assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant of concern
D&D	decontamination and dismantlement
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy, Idaho Operations Office
EPA	U.S. Environmental Protection Agency
ERA	ecological risk assessment
FFA/CO	Federal Facilities Agreement and Consent Order
Ge-spectrometer	germanium-spectrometer
GPRS	global positioning radiometric scanner
HEAST	Health Effects Assessment Summary Tables
HQ	hazard quotient
ICDF	INEEL CERCLA Disposal Facility
IDAPA	Idaho Administrative Procedures Act
IDHW	Idaho Department of Health and Welfare
INEEL	Idaho National Engineering and Environmental Laboratory
IRIS	Integrated Risk Information System
MTRU	mixed transuranic
NEPA	National Environmental Policy Act

NESHAP	National Emission Standards for Hazardous Air Pollutants
OU	operable unit
PBF	Power Burst Facility
PCB	polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act
RD/RA	remedial design/remedial action
RI/FS	remedial investigation/feasibility study
ROD	record of decision
RWMC	Radioactive Waste Management Complex
SL-1	Stationary Low-Power Reactor No. 1
SPERT	Special Power Excursion Reactor Test
TBC	to-be-considered guidance
TRU	transuranic
TRV	toxicity reference value
TSCA	Toxic Substance Control Act
UCL	upper confidence limit on the mean
WAG	waste area group
WERF	Waste Experimental Reduction Facility